Water Heater

Webasto
Feel the drive

Thermo Top Evo **Parking Heater** e1 00 0258

Installation documentation

Ford Focus / C-Max / Grand C-Max

Diesel
from model year 2011
Left-hand drive vehicle

WARNING!

Hazard warning:

Incorrect installation or repair of Webasto heating systems may cause a fire or result in the emission of carbon monoxide, which can be fatal. Serious or fatal injuries can be caused as a result.

Specialist company training, technical documentation, specialised tools and equipment are required to install and repair Webasto heating and cooling systems.
Only original Webasto parts must be used. For this, also see the catalog of air and water heater accessories from Webasto.

NEVER attempt to install or repair Webasto heating or cooling systems if you have not successfully completed the company training and thereby acquired the required technical skills, or if you do not have access to the required technical documentation, tools and equipment needed to carry out correct installation and repairs.

ALWAYS follow all Webasto installation and repair instructions and observe all warnings.

The initial startup is to be executed with the Webasto Thermo Test Diagnosis.

Webasto does not accept any liability for defects and damage that are attributable to installation by untrained staff.

Ident. No.: 1316981B_EN Fee Euro 10.00
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Validity

Manufacturer	Model	Type	EG-BE-No. / ABE
Ford	C-Max	DXA	e13 * 2007 / 46 * 1103 * ...
Ford	Grand C-Max	DXA	e13 * 2007 / 46 * 1103 * ...
Ford	Focus	DYB	e13 * 2007 / 46 * 1138 * ...

Ford C-Max / Grand C-Max

Engine type	Engine model	Output in kW	Displacement in cm³
T3	Diesel	70	1560
T1	Diesel	85	1560

Ford Focus

Engine type	Engine model	Output in kW	Displacement in cm³
T3	Diesel	70	1560
T1	Diesel	85	1560

Vehicle and engine types, equipment variants and national specifications not listed in this installation documentation have not been tested. However, installation according to this installation documentation may be possible.

The installation location of the digital timer should be confirmed with the end customer before installation.

Heater/installation kit

Quantity	Designation	Order No.:
1	Basic delivery scope *Thermo Top Evo*	See price list
1	Installation Kit Ford Focus / C-Max / Grand C-Max 2011 Diesel	1316980A
1	Heater control	See price list

To be ordered additionally for the installation of digital timer:

Quantity	Designation	Order No.:
1	Extension of clock wiring harness	70813B

Foreword

This installation documentation applies to Ford Focus / C-Max / Grand C-Max Diesel vehicles - for validity, see page 2 - from model year 2011 and later, assuming technical modifications to the vehicle do not affect installation, any liability claims excluded. Depending on the vehicle version and equipment, modifications may be necessary during installation with respect to this installation documentation.

However, where this is the case, the stipulations in this "installation documentation" the "operating instructions" and "installation instructions" of the *Thermo Top Evo* should be observed.
The corresponding rules of technology and any information from the vehicle manufacturer should be observed during the installation work.

General instructions

Installation should be carried out according to the general, standard rules of technology. Unless specified otherwise, fasten hoses, lines and wiring harnesses to original vehicle lines and wiring harnesses using cable ties. Insulate loose wires and tie back.
Sharp edges must be provided with rub protection (cut-open fuel hose)!
Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K, Order No. 111329).
When installing an IPCU, the corresponding settings must be checked or adjusted before installation.

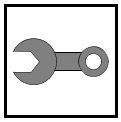
Special tools

- Torque wrench for 2.0 - 10 Nm
- Hose clamping pliers
- Metric thread-setter kit
- Punching tool 60 mm dia.

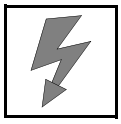
Explanatory notes on document

To provide you with a quick overview of the individual working steps, you will find an identification mark on the outside top right corner of the page in question.

Mechanical system

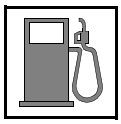


Electrical system

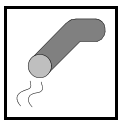


Coolant circuit

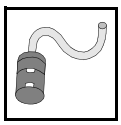
Fuel



Exhaust gas



Combustion air



Software

Special features are highlighted using the following symbols:

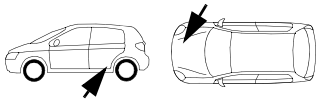
Specific risk of injury or fatal accidents.

Specific risk of damage to components.

Specific risk of fire or explosion.

Reference to general installation instructions of Webas-to components or to the manufacturer's vehicle-specific documents.

Reference to a special technical feature.



The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.

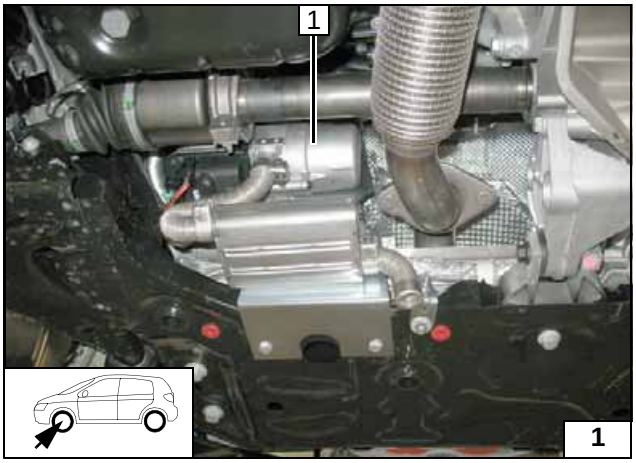
All dimensions are in mm!
Tightening torque of 5x13 heater bolts = 8Nm!
Tightening torque of 5x15 bolt of water connection piece retaining plate = 7Nm!

Preliminary work

WARNING!

- Open the fuel tank cap and vent the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Copy the factory number from the original type label to the duplicate type label.
- Remove year that does not apply from the duplicate label.
- Attach the duplicate label (type label) in the appropriate place.
- Declamp and remove battery.
- Remove engine cover
- Remove windscreen wiper
- Remove cover of coolant reservoir
- Remove cover of coolant reservoir for engine compartment
- Discharge coolant according to the manufacturer's instructions
- Remove intake manifold
- Remove engine underride protection
- Remove underbody trim at the near the tank
- Detach heat protection trim of exhaust system in the area of the tank
- Remove tank
- Remove the footwell trim on the front passenger side.
- Remove the glove compartment.
- Remove shift lever trim
- Remove trim of centre console
- Remove A/C control panel in accordance with manufacturer's instructions.
- Remove A-pillar trim of the footwell on the front passenger side (only with Telestart)

Remove page 29 "Operating instructions for end customer" and add to the vehicle operating instructions.



Heater installation location

1 Heater

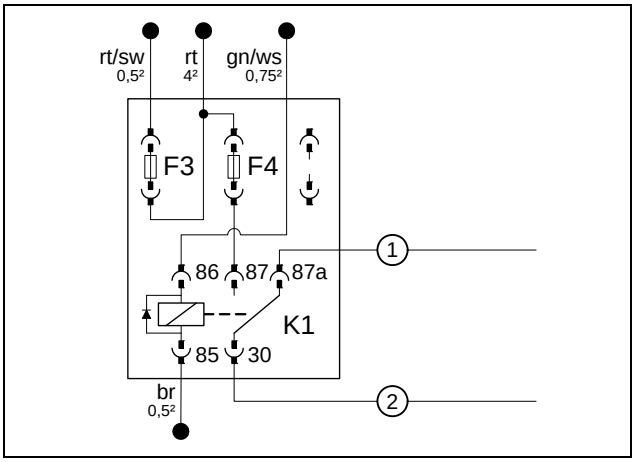
Installation location

Preparing electrical system

Wire sections retain their numbering in the entire document.

Inserting F4, Preparing K1 relay

All equipment



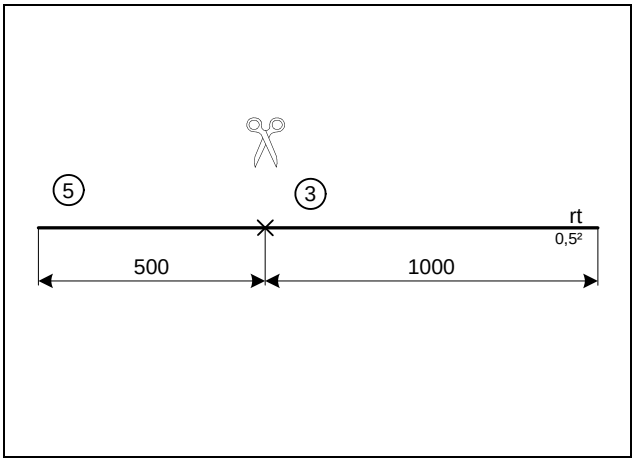
Connect wires to socket of K1 relay. Insert F4 25A fuse. K1 relay is inserted only after installing the fuse holder.

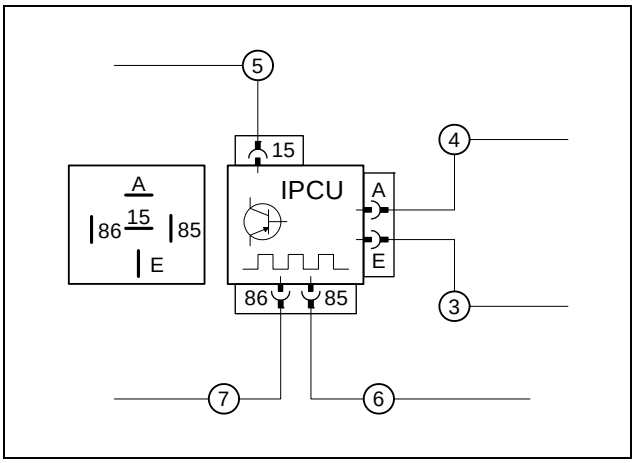
①Red (rt) wire 4²
②Black (sw) wire 4²

Automatic air-conditioning

Wire sections retain their numbering in the entire document.

Cutting wires to length





Connect wires to IPCU socket.
IPCU view on contact side.
The IPCU included in the kit is pre-programmed with the following settings:

Premounting IPCU

Duty cycle: 37%
Frequency: 400Hz
Voltage: 3.6V
Function: Low side

③Red (rt) wire 0.5²
④Black (sw) wire 0.5²
⑤Red (rt) wire 0.5²
⑥Brown (br) wire 0.5²
⑦Green/white (gn/ws) wire 0.5²

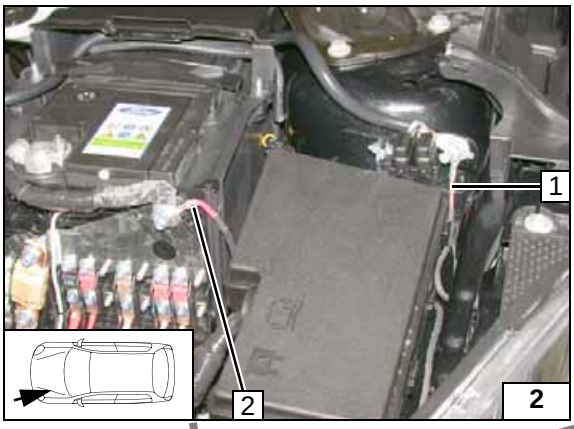
The settings are to be checked during the function check on the vehicle, and adjusted if necessary.
Pull wires **3** and **4** into the attached protective sleeving.

Electrical system

Focus

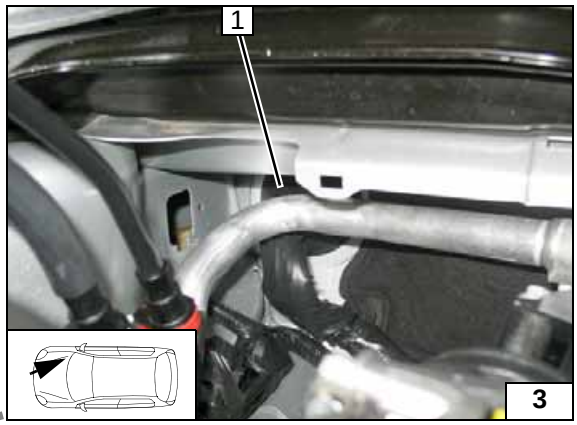
Plus and earth wire

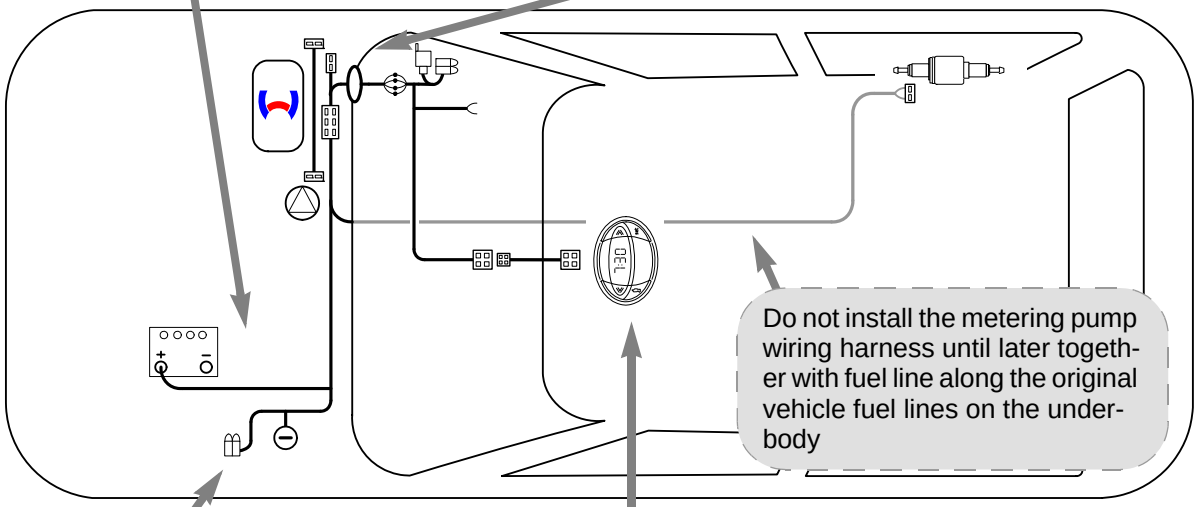
1 Earth wire, 8 mm dia. cable lug at original vehicle earth support point
2 Positive wire on positive battery terminal



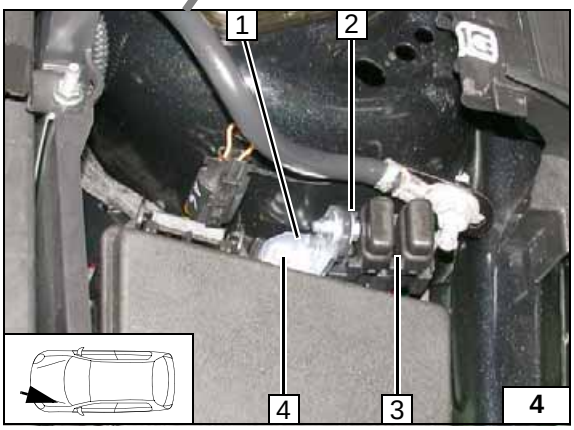
Wiring harness pass through

1 Protective rubber plug



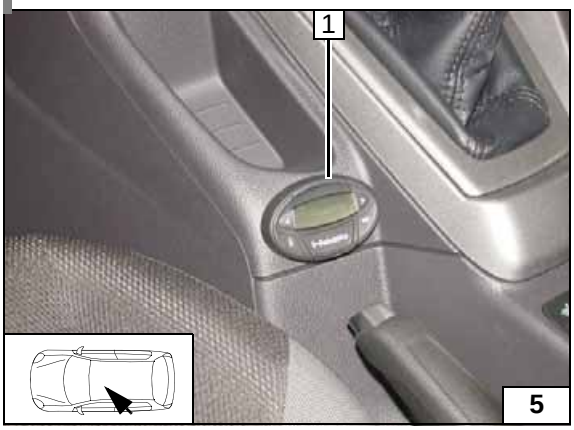

Do not install the metering pump wiring harness until later together with fuel line along the original vehicle fuel lines on the underbody

Wiring harness routing diagram (manual A/C system)



Fuse holder of engine compartment

1 Angle bracket
2 M5x16 bolt, large diameter washer [2x], retaining plate of fuse holder, nut
3 Fuses F1-2
4 M6x20 bolt, flanged nut, existing hole



Digital timer

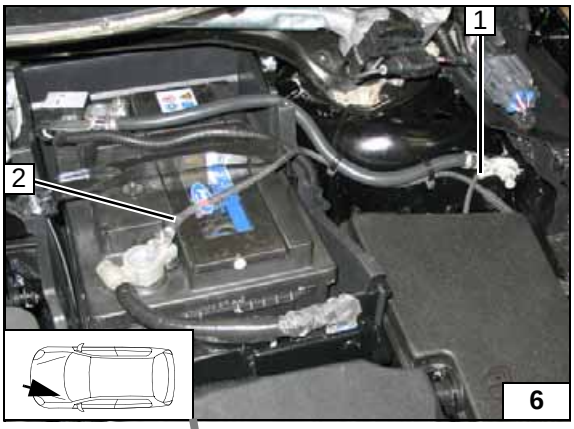
Use clock cable extension when installing digital timer.

1 Digital timer

C-Max / Grand C-Max

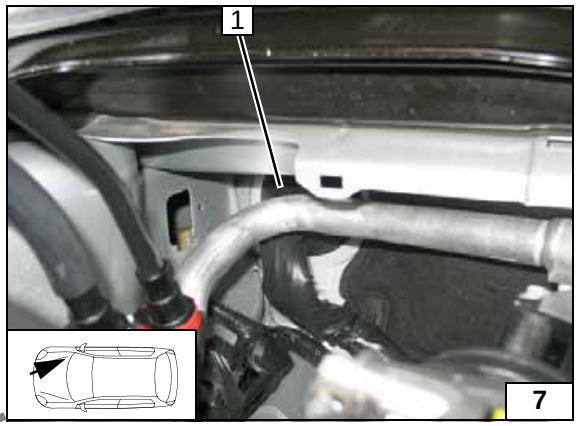
Plus and earth wire

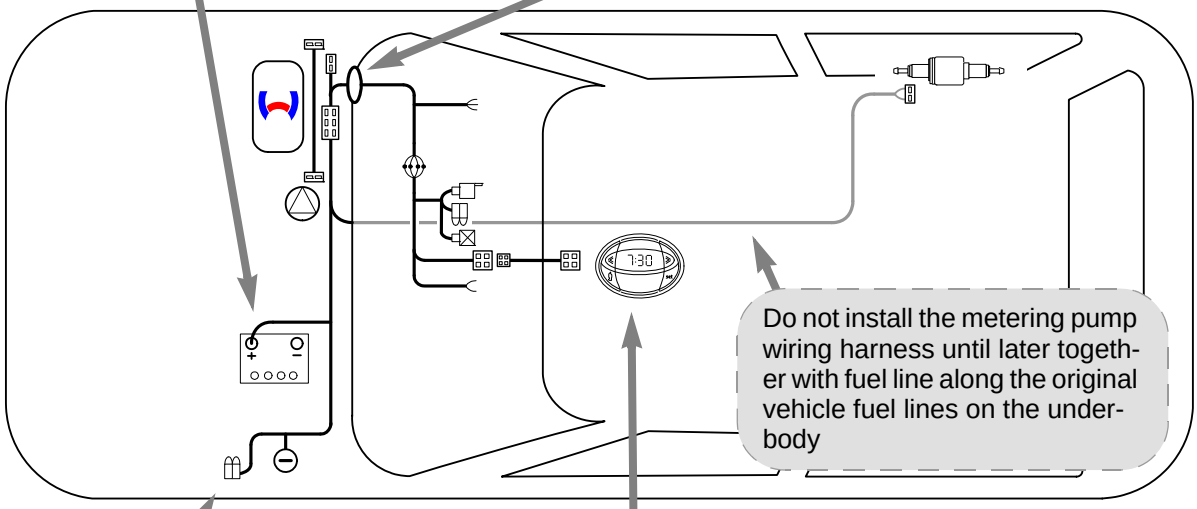
1 Earth wire, 8 mm dia. cable lug at original vehicle earth support point
2 Positive wire on positive battery terminal



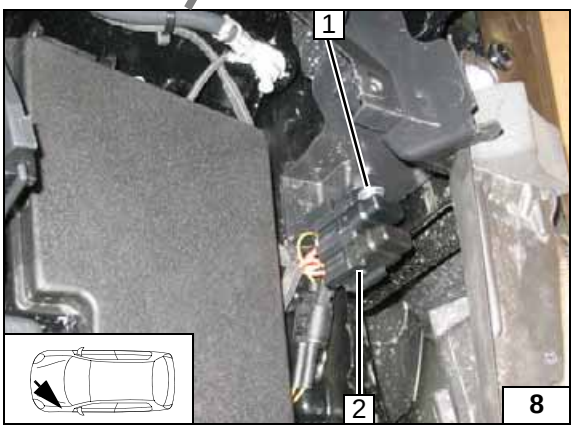
Wiring harness pass through

1 Protective rubber plug




Do not install the metering pump wiring harness until later together with fuel line along the original vehicle fuel lines on the underbody

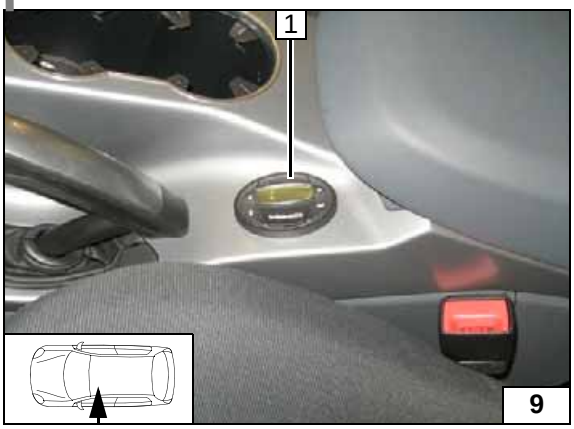
Wiring harness routing diagram



Fuse holder of engine compartment

When drilling, watch components located behind.

1 5.5mm dia. hole, M5x16 bolt, large diameter washer, retaining plate of fuse holder, nut
2 Fuses F1-2

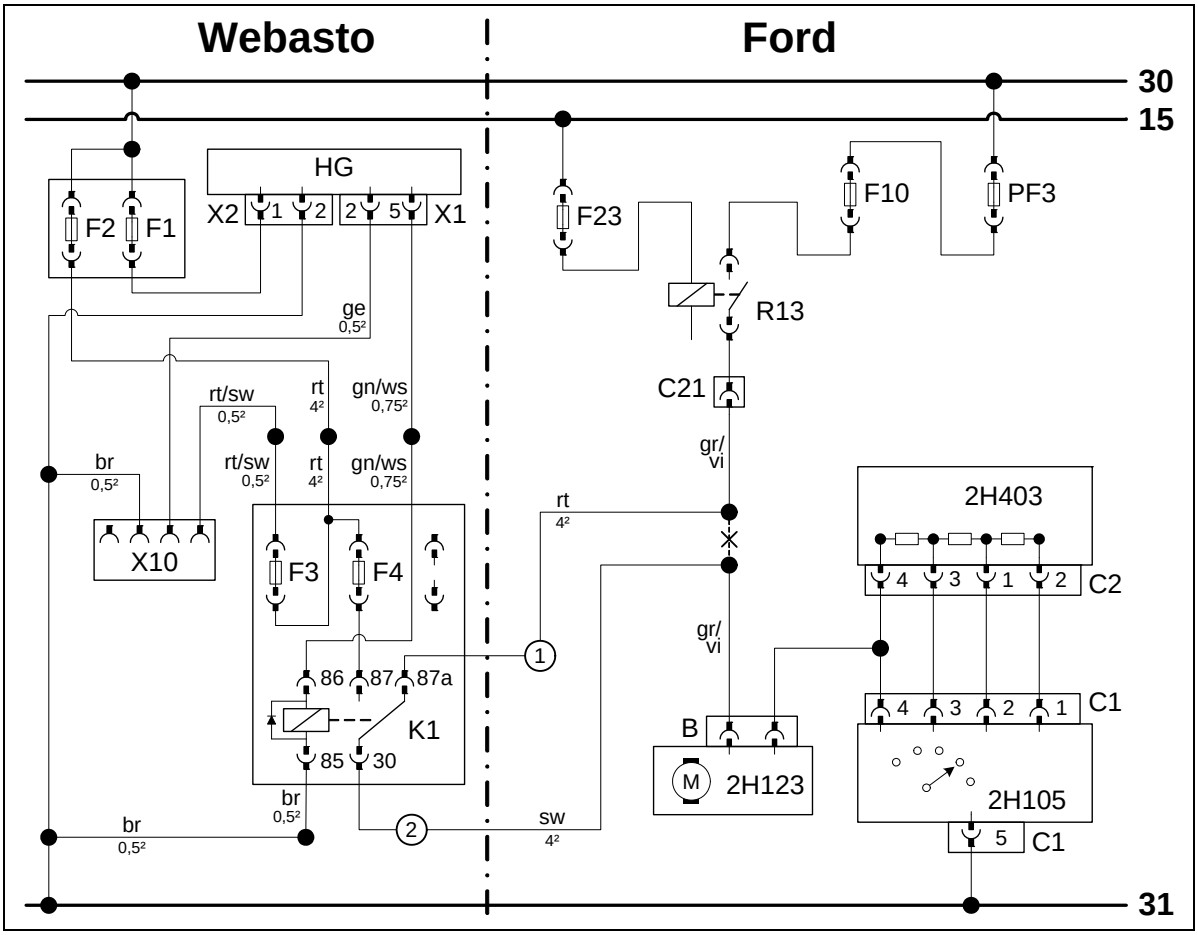


Digital timer

Use clock cable extension when installing digital timer.

1 Digital timer

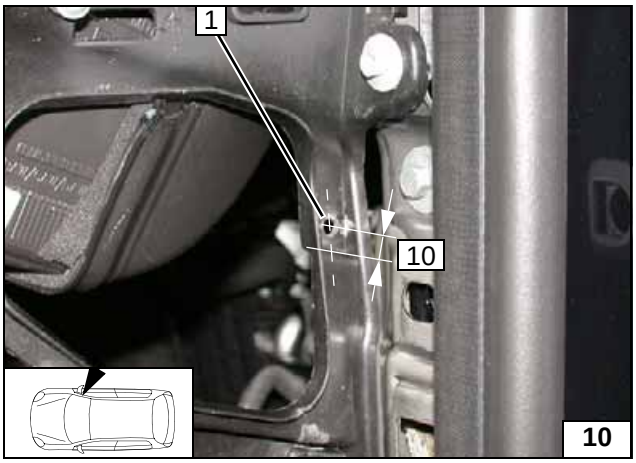
Fan control for manual air conditioning



Webasto components		Vehicle components		Colours and symbols	
HG	Heater TT-Evo	2H403	Resistor group	rt	red
X1	6-pin heater connector	C2	Connector 2H403	sw	black
X2	2-pin heater connector	2H123	Fan motor	ge	yellow
X10	4-pin connector Heater control	B	Connector 2H123	gn	green
		2H105	Fan switch	or	orange
K1	Fan relay	C 1	Connector 2H426	ws	white
F1	Fuse 20A	C21	Socket connection	br	brown
F2	Fuse 30A	R13	Fan relay	gr	gray
F3	Fuse 1A	PF3	Fuse 100A	vi	violet
F4	Fuse 25A	F10	Fuse 40A		
		F23	Fuse 5A	**X**	Cutting point
				Wiring colours may vary.	

Wiring diagram

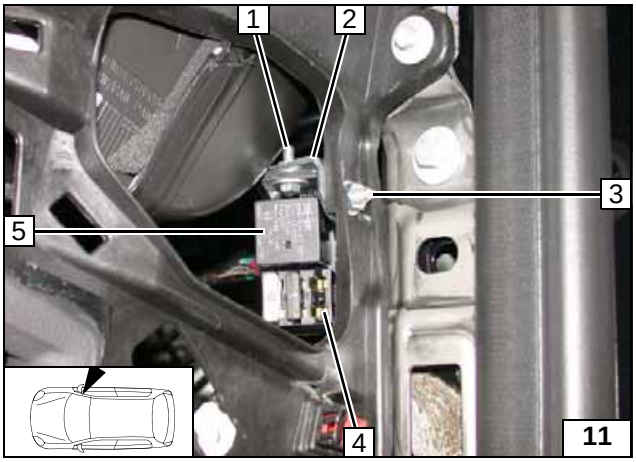
Legend



Focus

1 6.5 mm dia. hole

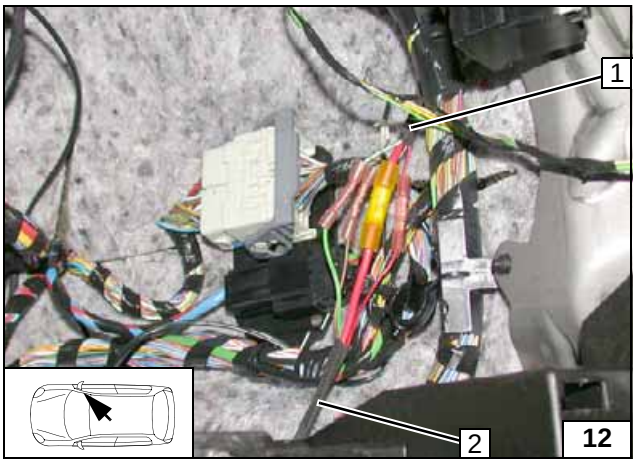
Hole for passenger compartment fuse holder



Mount K1 relay **5** after installation.

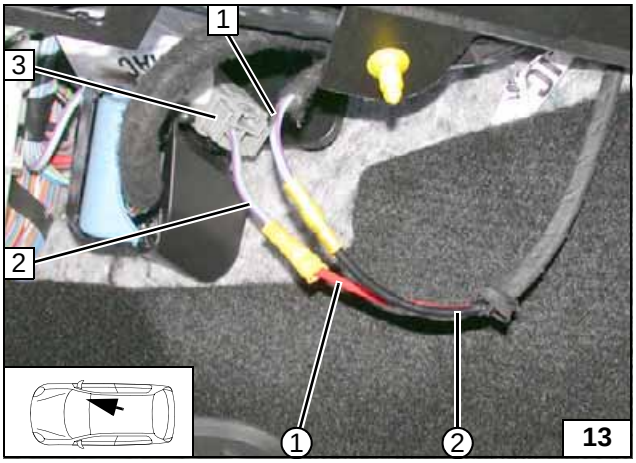
1 M5x16 bolt, large diameter washer [2x], nut
2 Angle bracket
3 M6x20 bolt, flanged nut
4 Fuse holder of passenger compartment

Mounting fuse holder of passenger compartment



Produce connections as shown in wiring diagram. Connect wiring harness of passenger compartment fuse holder **2** with wiring harness of heater **1** according to wiring diagram, so that wires of the same colour are connected to each other.

Connecting wiring harnesses



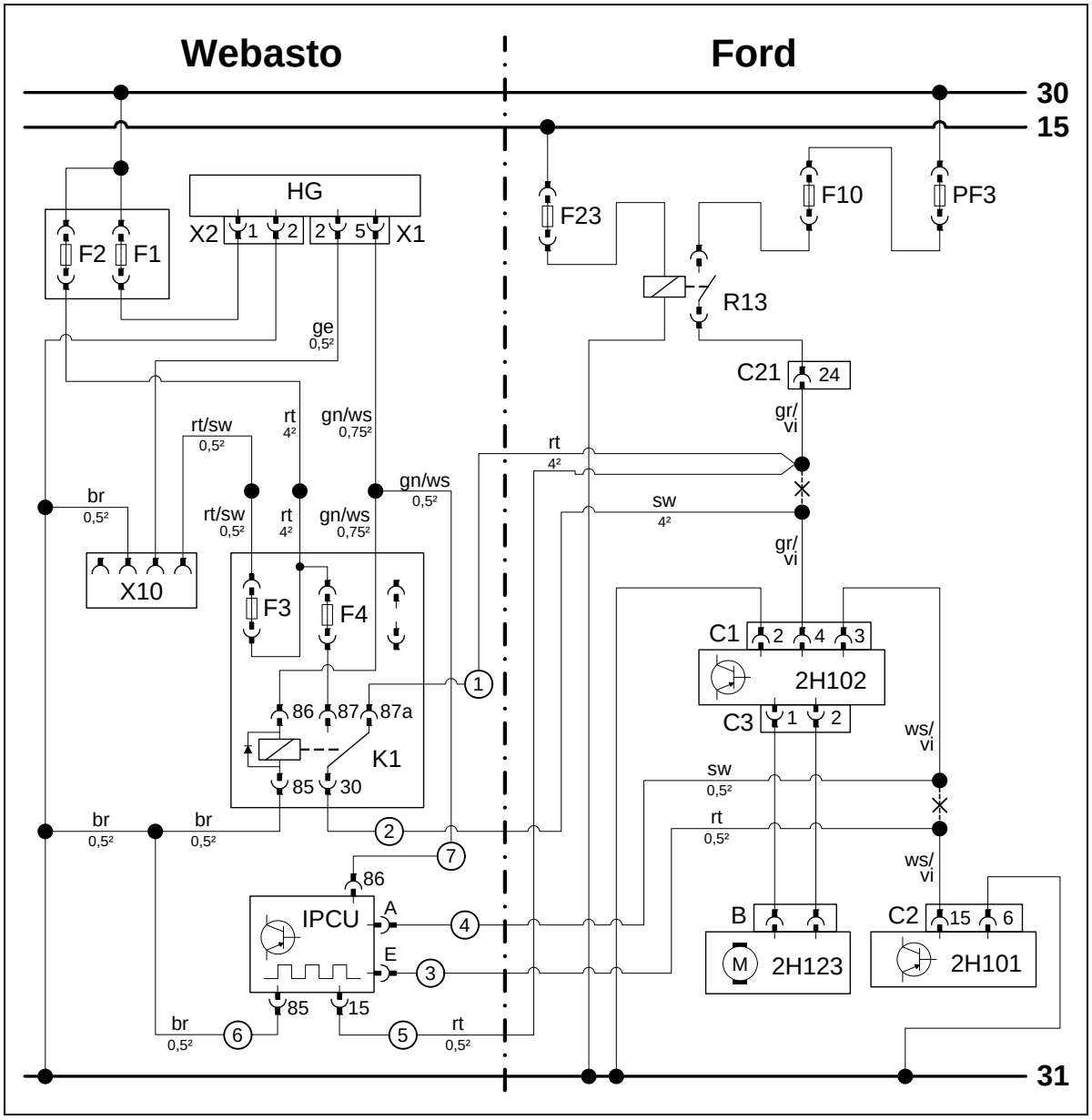
Connect to socket connector C21 **3** Pin 1 before the fan motor.
Produce connections as shown in wiring diagram.

1 Gray/violet (gr/vi) wire to fan motor 2H123
2 Gray/violet (gr/vi) wire to fan relay R13
① Red (rt) wire from K1/87a
② Black (sw) wire of K1/30

Connecting fan motor

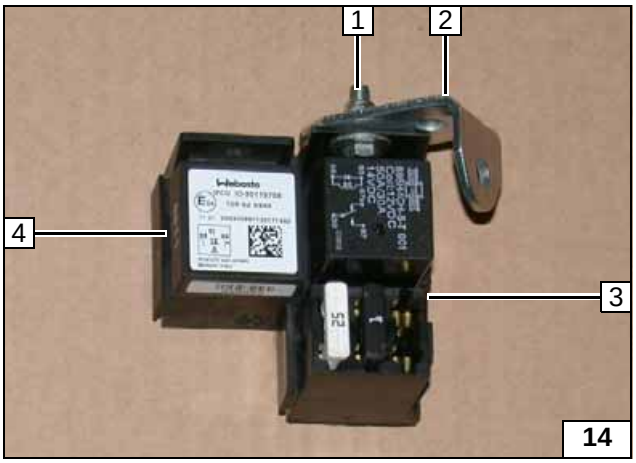
Automatic air-conditioning fan control

Wiring diagram



Legend

Webasto components		Vehicle components		Colours and symbols	
HG	Heater TT-Evo	2H102	Fan controller	rt	red
X1	6-pin heater connector	C1	Connector 2H102	sw	black
X2	2-pin heater connector	C3	Connector 2H102	ge	yellow
X10	4-pin connector Heater control	2H123	Fan motor	gn	green
		B	Connector 2H123	br	brown
K1	Fan relay	2H101	A/C control unit	ws	white
F1	Fuse 20A	C 2	Connector 2H101	gr	gray
F2	Fuse 30A	C21	Socket connection	vi	violet
F3	Fuse 1A	R13	Fan relay		
F4	Fuse 25A	PF3	Fuse 100A		
IPCU	Pulse width modulator	F10	Fuse 40A		
IPCU settings:		F23	Fuse 5A		
Duty cycle:	37%				
Frequency:	400Hz				
Voltage:	3.6V			**X**	Cutting point
Function:	Low side			Wiring colours may vary.	



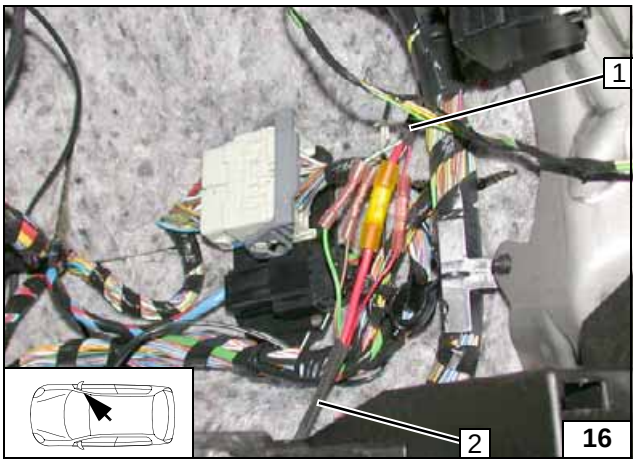
Focus

1 M5x16 bolt, large diameter washer [2x], nut
2 Angle bracket
3 Fuse and relay socket
4 Mount IPCU socket

Premounting K1 relay

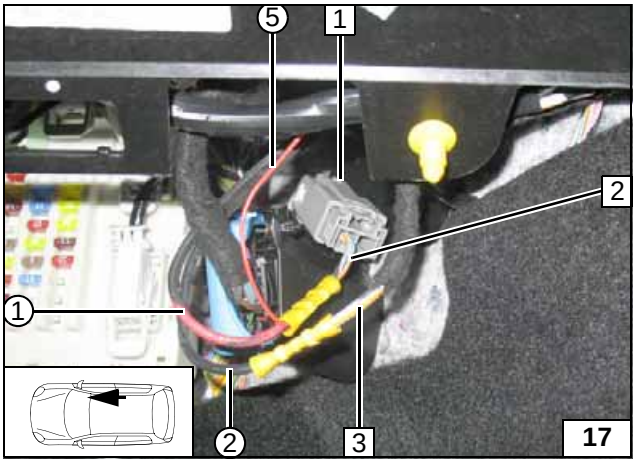
1 M6x20 bolt, flanged nut

Mounting fuse holder of passenger compartment



Produce connections as shown in wiring diagram. Connect wiring harness of passenger compartment fuse holder **2** with wiring harness of heater **1** according to wiring diagram, so that wires of the same colour are connected to each other.

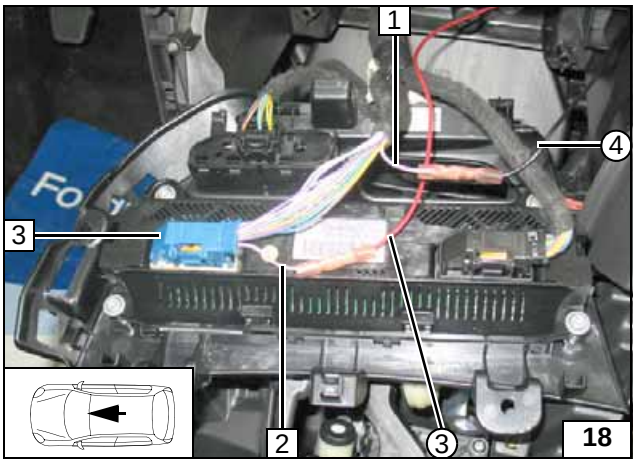
Connecting wiring harnesses



Connect to socket connector C21 **1** Pin 1 before the fan controller. Produce connections as shown in wiring diagram.

2 Green/orange (gr/or) wire to fan relay R13
3 Green/orange (gr/or) wire to fan controller 2H102
① Red (rt) wire from K1/87a
② Black (sw) wire of K1/30
⑤ Red (rt) wire of IPCU 15

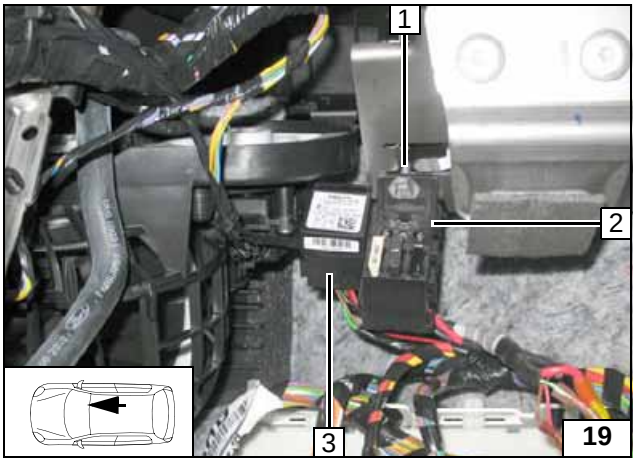
Connecting fan controller



Connect to connector C2 **3** Pin15 from A/C control unit. Produce connections as shown in wiring diagram.

1 White/violet (ws/vi) wire to fan controller 2H102
2 White/violet (ws/vi) wire from connector C2, Pin 15
③ Red (rt) wire of IPCU/E
④ Black (sw) wire of IPCU/A

Connecting A/C control unit

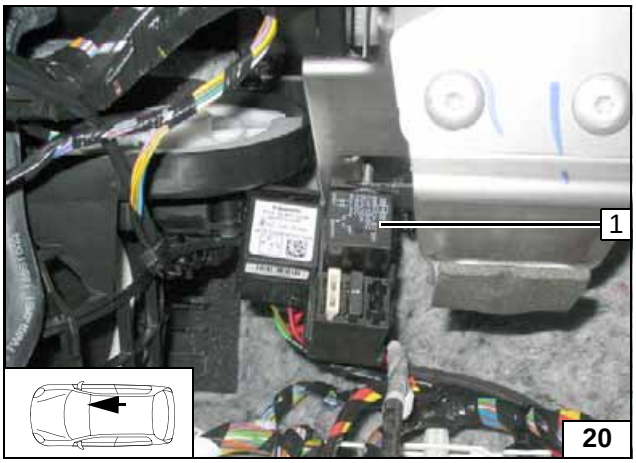


C-Max and Grand C-Max

Engage fuse holder of passenger compartment **2** with IPCU socket **3**.

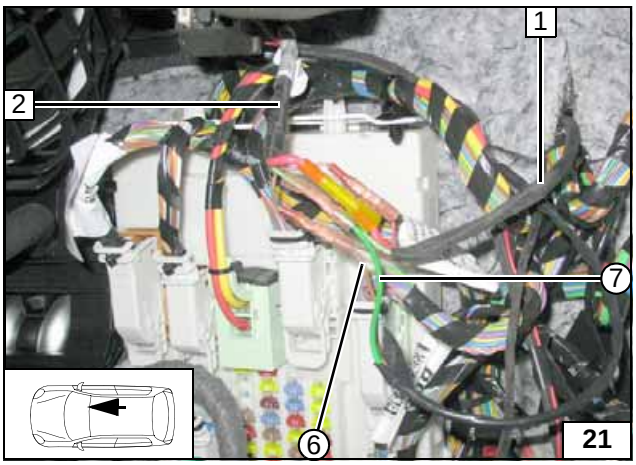
1 M5x16 bolt, large diameter washer, existing threased hole

Mounting fuse holder of passenger compartment



1 K1 relay

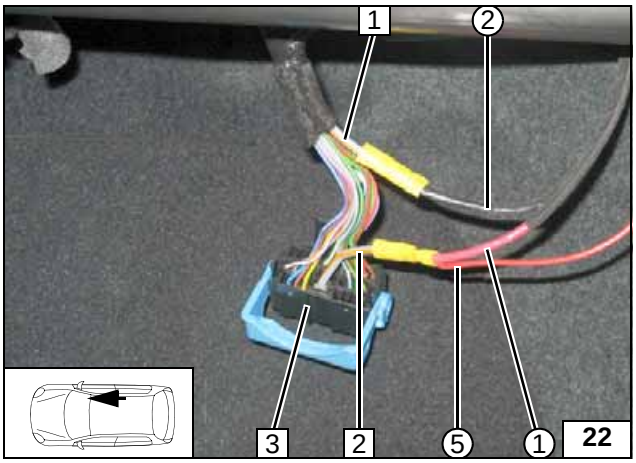
Mounting K1 relay



Produce connections as shown in wiring diagram. Connect wiring harness of passenger compartment fuse holder **2** with wiring harness of heater **1** according to wiring diagram, so that wires of the same colour are connected to each other.

⑥ Brown (br) wire of IPCU/85
⑦ Green/white (gn/ws) wire of IPCU/86

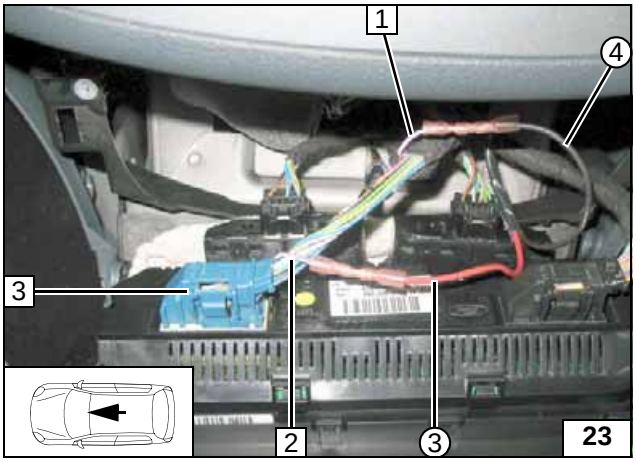
Connecting wiring harnesses



Connect to socket connector C21 **3** Pin 24 before the fan controller.
Produce connections as shown in wiring diagram.

1 Green/violet (gr/vi) wire to fan controller 2H102
2 Gray/violet (gr/vi) wire to fan relay R13
① Red (rt) wire from K1/87a
② Black (sw) wire of K1/30
⑤ Red (rt) wire of IPCU 15

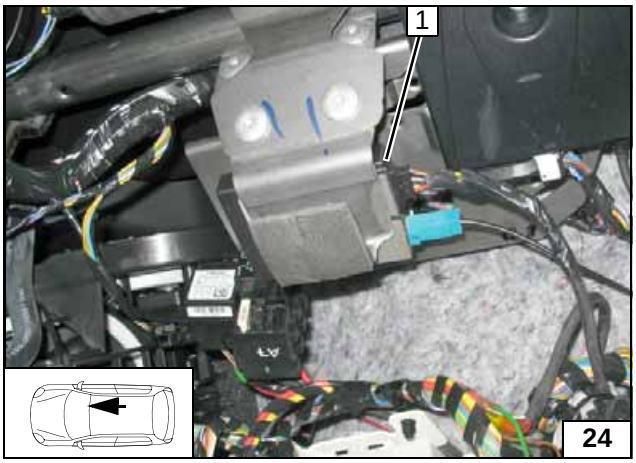
Connecting fan controller



Connect to connector C2 **3** Pin15 from A/C control unit.
Produce connections as shown in wiring diagram.

1 White/violet (ws/vi) wire to fan controller 2H102
2 White/violet (ws/vi) wire from connector C2, Pin 15
③ Red (rt) wire of IPCU/E
④ Black (sw) wire of IPCU/A

Connecting A/C control unit

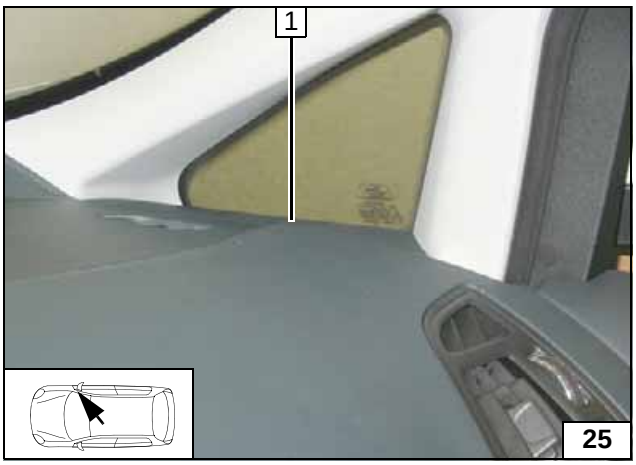


Remote option (Telestart)

C-Max / Grand C-Max

Fasten receiver **1** with adhesive tape.

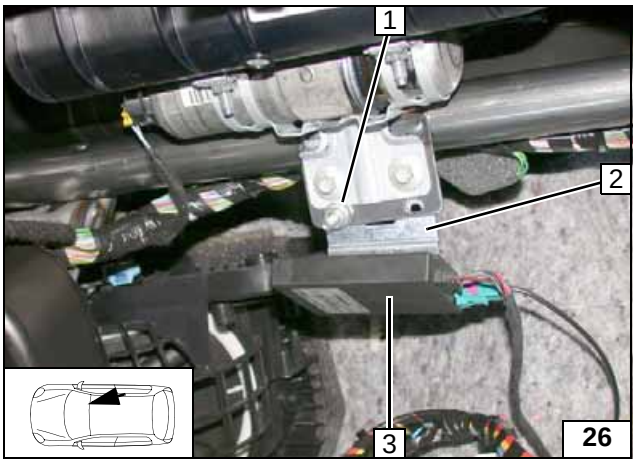
Mounting receiver



1 Antenna

Mounting antenna

Mounting receiver

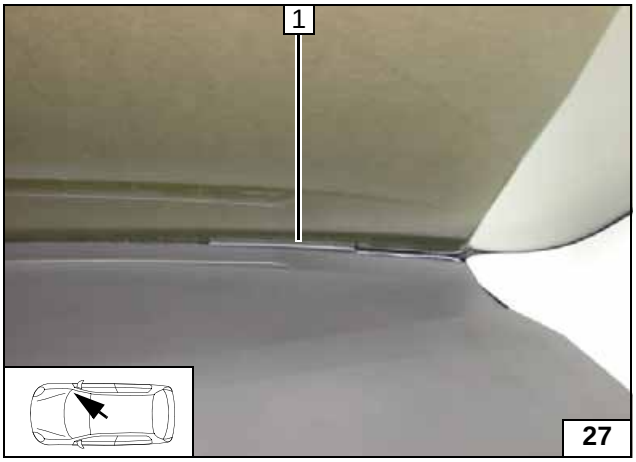


Focus

Angle down bracket of receiver **2** as shown.

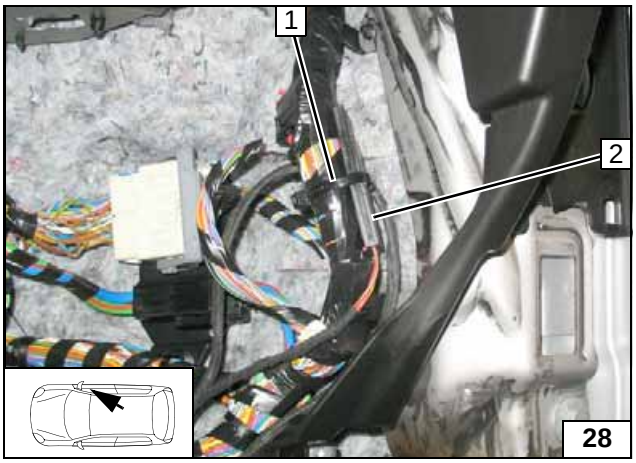
1 M6x20 bolt, flanged nut, existing hole
3 Receiver

Mounting antenna



1 Antenna

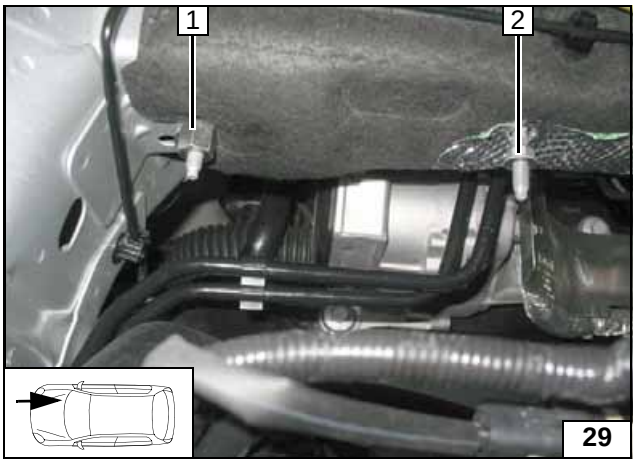
Mounting temperature sensor



Temperature sensor T100 HTM

All vehicles

Fasten temperature sensor **2** with cable tie **1** to original vehicle wiring harness.

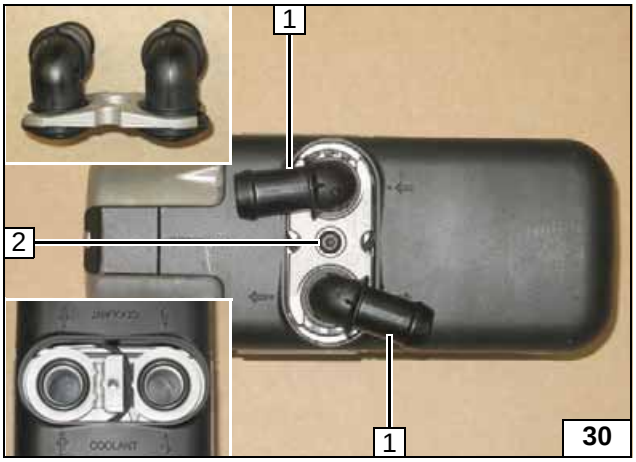


Preparing installation location

Mount M8 flanged nut **2** on original vehicle stud bolt with flange in front (turn by a half).

1 M8x20 spacer nut, original vehicle stud bolt

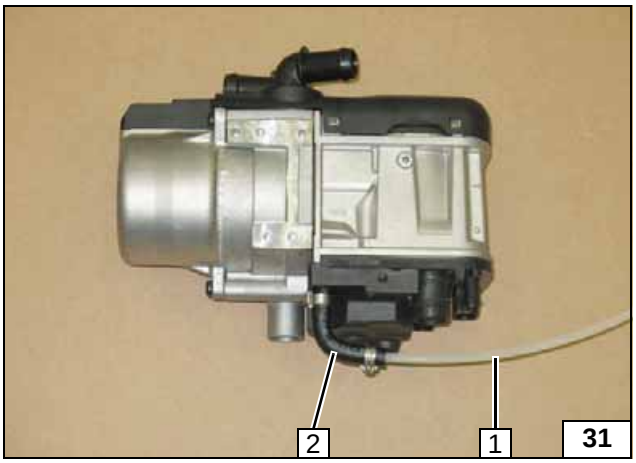
Mounting installation location



Preparing heater

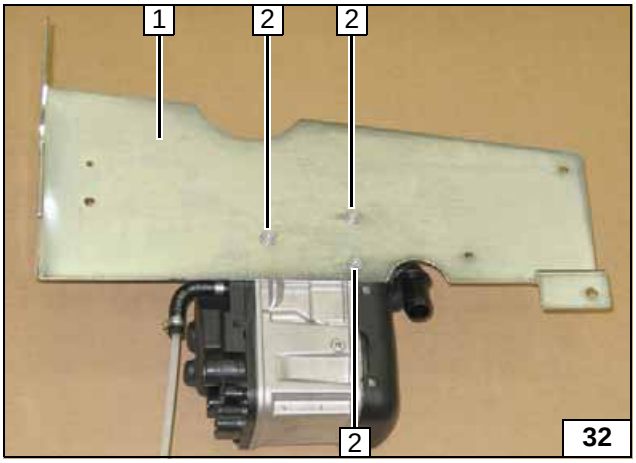
1 Coolant connecting piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of coolant connecting pieces

Mounting coolant connecting pieces



1 Fuel line
2 90° moulded hose, 10 mm dia. clamp [2x]

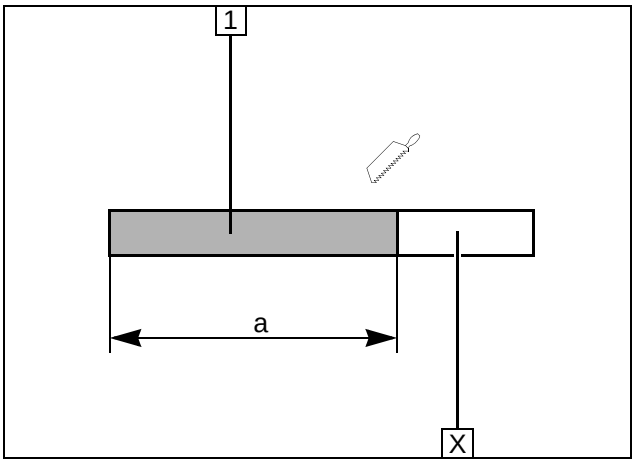
Premounting fuel line



1 Bracket
2 5x13 self-tapping bolt [3x]

Mounting bracket

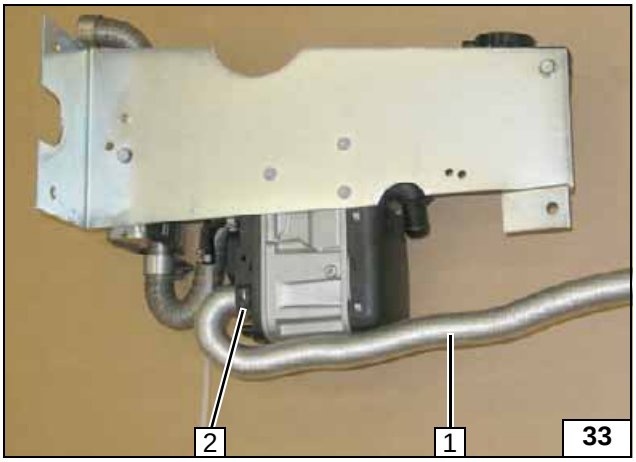
Cutting combustion air pipe to length



Discard section **X**.

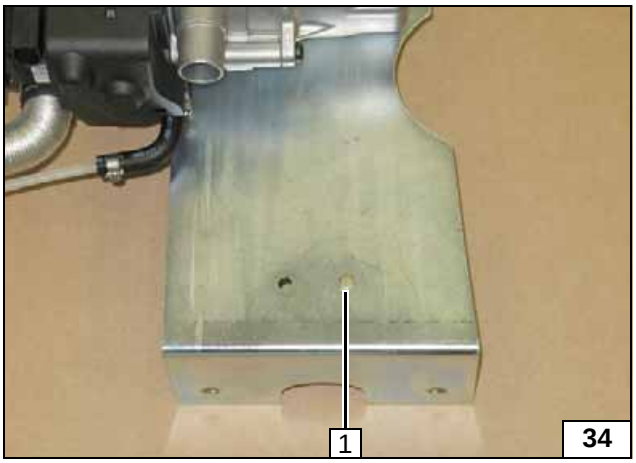
1 Combustion air pipe
a = 600

Mounting combustion air pipe



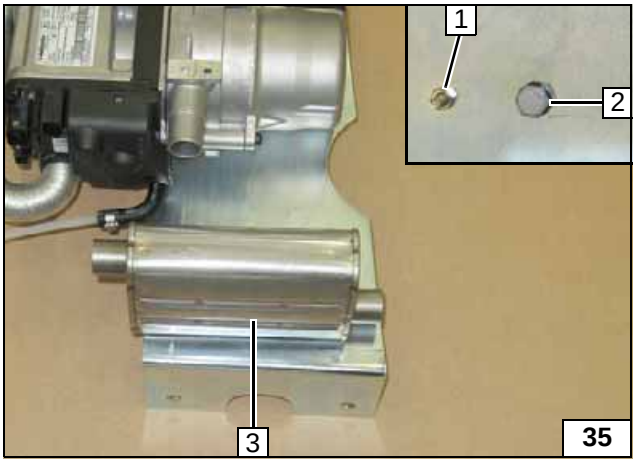
1 Combustion air pipe
2 25 mm dia. spring clip

Mounting twist lock



1 M4x12 bolt, nut from the rear

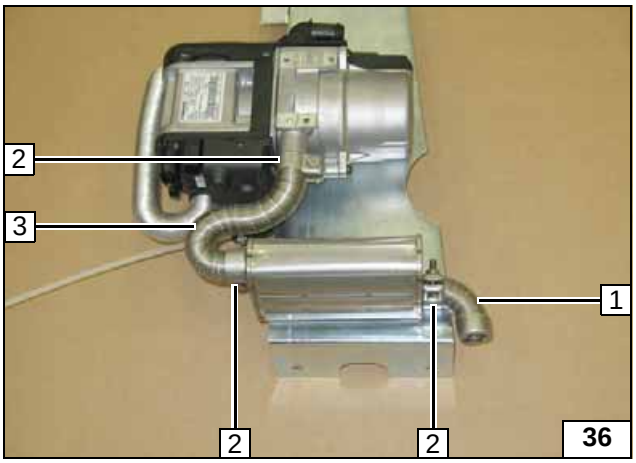
Mounting silencer



Position housing notch of silencer **3** over bolt head **1** (twist lock).

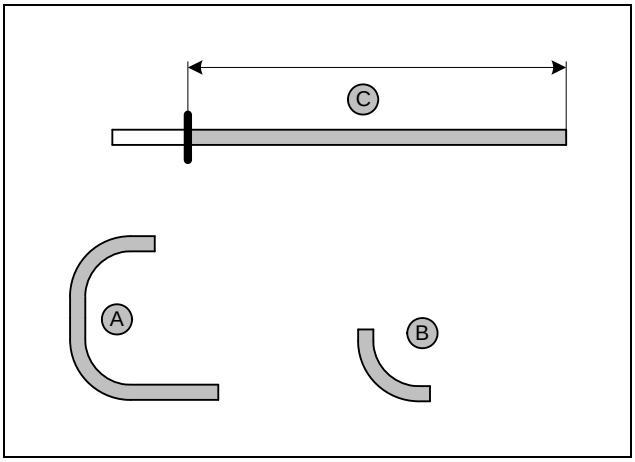
2 M6x16 bolt, spring lockwasher

Mounting exhaust pipe



1 93 exhaust end section
2 Hose clamp [3x]
3 Exhaust pipe 200

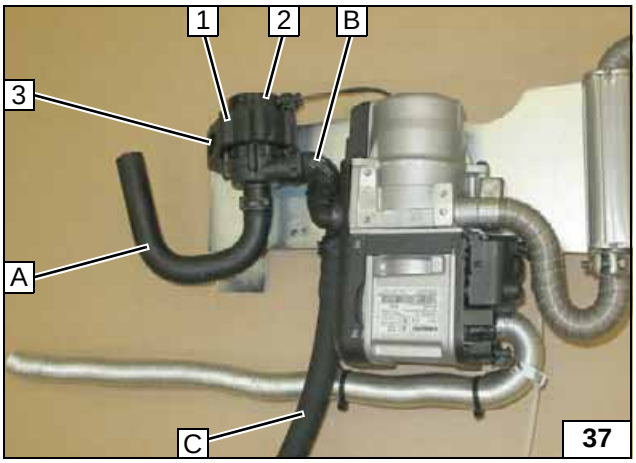
Cutting hose to length



Discard section **X**.
Hose **A** = 180°, 18 mm dia. moulded hose.
Hose **B** = 90°, 18 mm dia. moulded hose.

C = 460

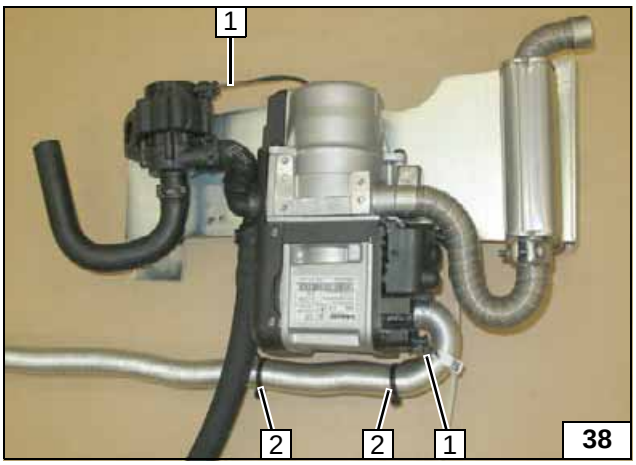
Mounting hoses and circulating pump



All spring clips = 25 mm dia.

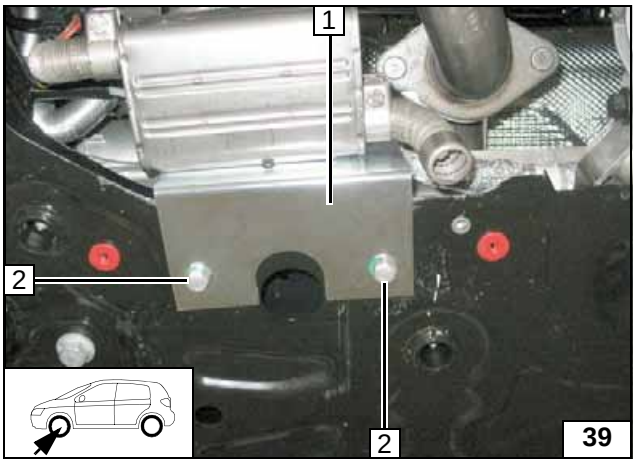
1 Mount of circulating pump
2 Circulating pump
3 M6x25 bolt, flanged nut

Connecting wiring harness



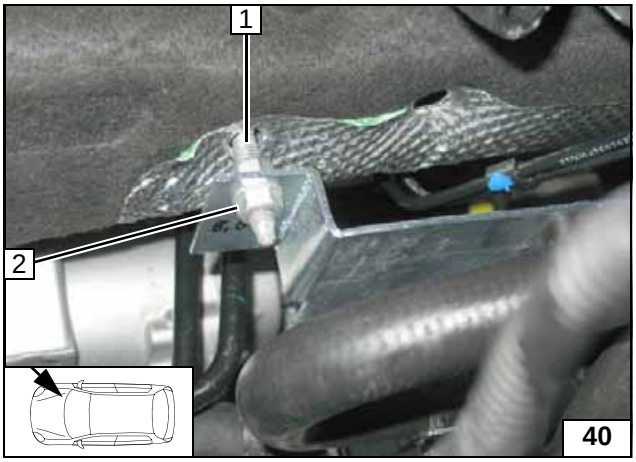
1 Circulating pump wiring harness
2 Cable tie [2x]

Installing heater



1 Bracket
2 M8x20 bolt, washer, flanged nut, existing hole [2x each]

Loosely mounting heater

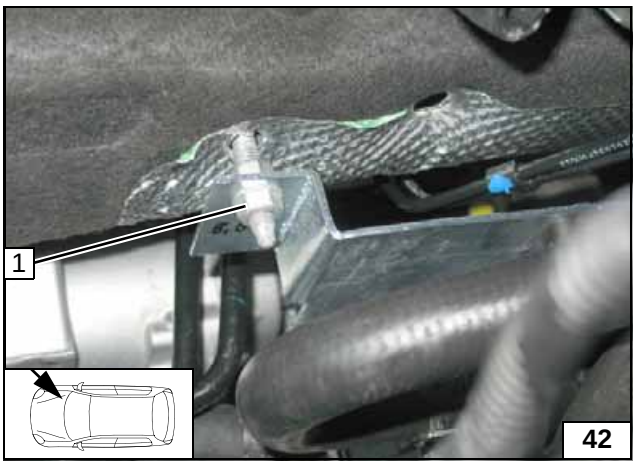


Mount heater on original vehicle stud bolt **1**, install M8 flanged nut **2** loosely.

Loosely mounting heater

Align heater. Ensure sufficient distance from neighbouring components. Ensure minimum distance > 5mm from steering components and > 15mm from parts of transmission, cardan shaft and engine.
Tighten M8x20 bolts.

Aligning heater



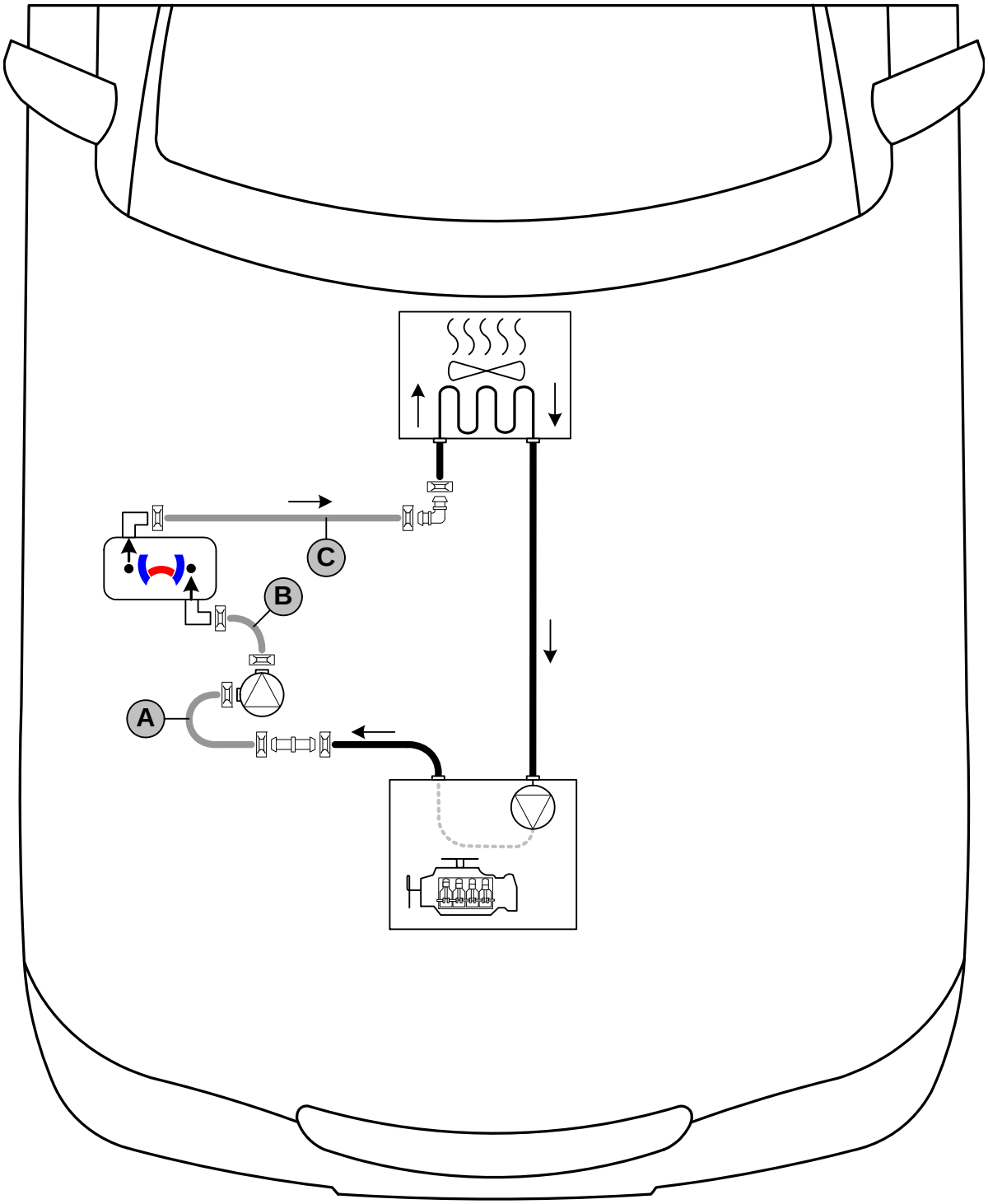
1 Tighten flanged nut M8

Mounting heater

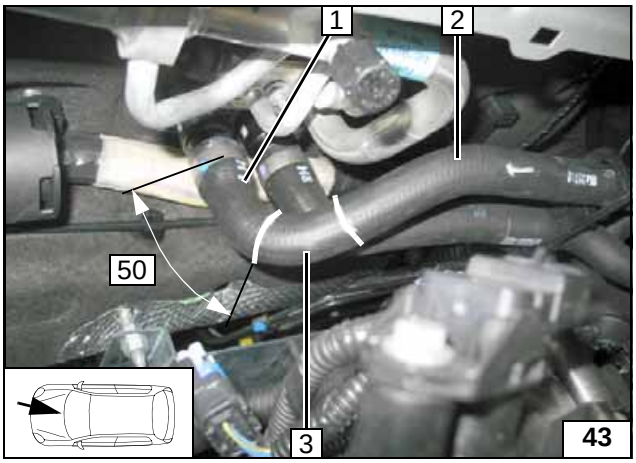
Coolant circuit

WARNING!
Any coolant running off should be collected in an appropriate container. Route hoses kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. When installing the hoses, the heater must be filled with coolant.
The connection should be "inline" based on the following diagram:
The displayed coolant circuit is meant primarily for passenger compartment heating.

Hose routing diagram



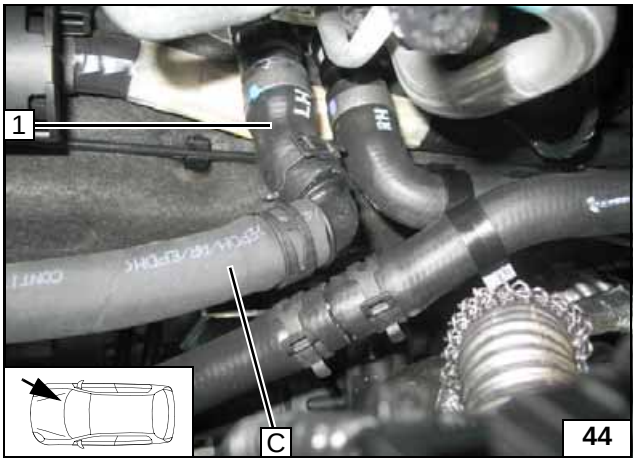
All spring clips = 25 mm dia.
All connecting pipes and = 18x18 dia.



Cut hose of engine outlet / heat exchanger inlet at the markings.

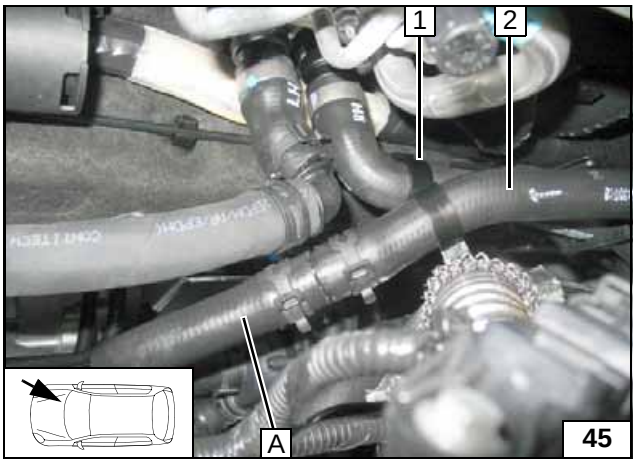
1 Hose section of heat exchanger inlet
2 Engine outlet hose section
3 Discard section

Cutting point



1 Hose on heat exchanger inlet

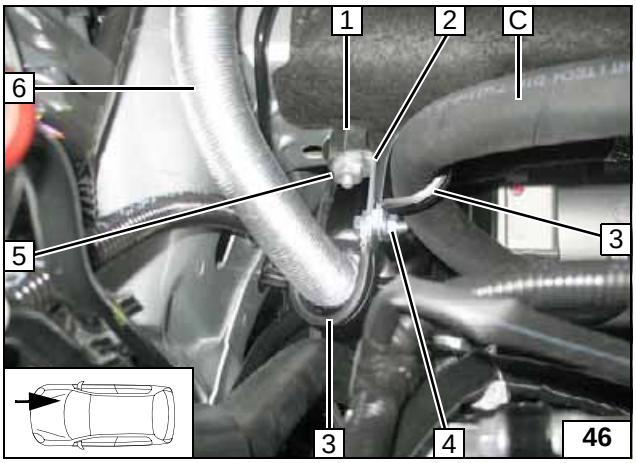
Connecting heat exchanger inlet



Align hoses. Ensure sufficient distance from neighbouring components, or correct.

1 Hose bracket
2 Hose of engine outlet

Connecting engine outlet

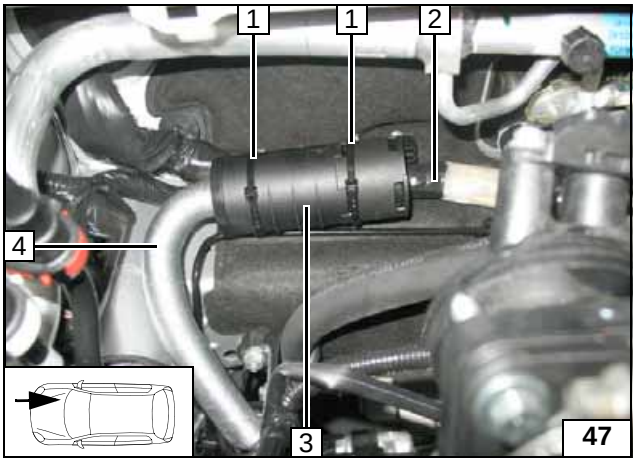


Combustion air

Drill out angle bracket **2** on the short shank to 8.5 mm dia.

1 M8x15 spacer nut, original vehicle stud bolt
3 25 mm dia. rubber-coated p-clamp [2x]
4 M6x20 bolt, flanged nut
5 M8 flanged nut
6 Combustion air pipe

Fastening hose C and combustion air pipe



1 Cable tie [2x each]
2 Original vehicle wiring harness
3 Silencer
4 Combustion air pipe

Mounting silencer

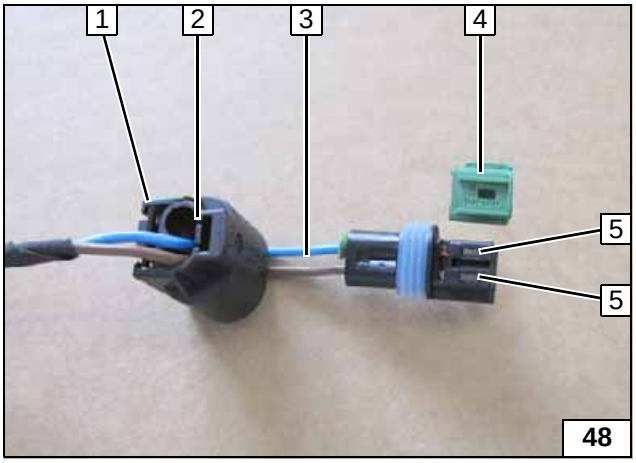
Fuel

CAUTION!
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

Collect any discharged fuel in an appropriate container.

Install fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties.
Mount the fuel line and wiring harness with rub protection on sharp edges.

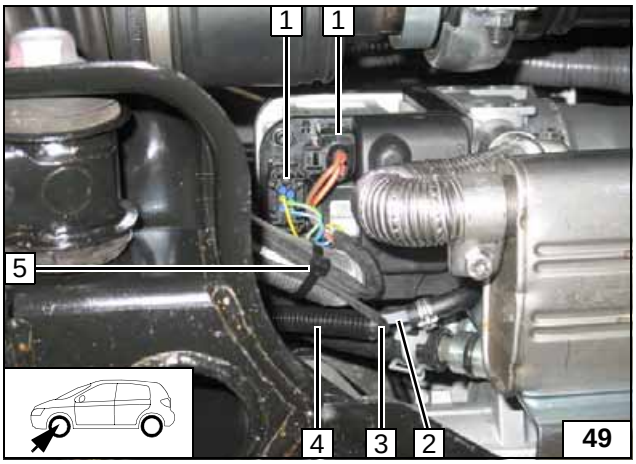
WARNING!
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.



Dismantling connector

Complete connector of metering pump after routing. Pin assignment is not relevant.

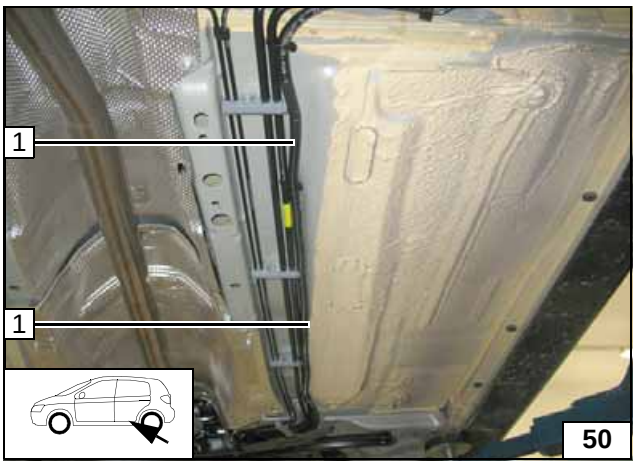
1 Connector housing
2 Lock
3 Blue/brown (bl / br) wires
4 Coding
5 Time lock



Mounting wiring harnesses

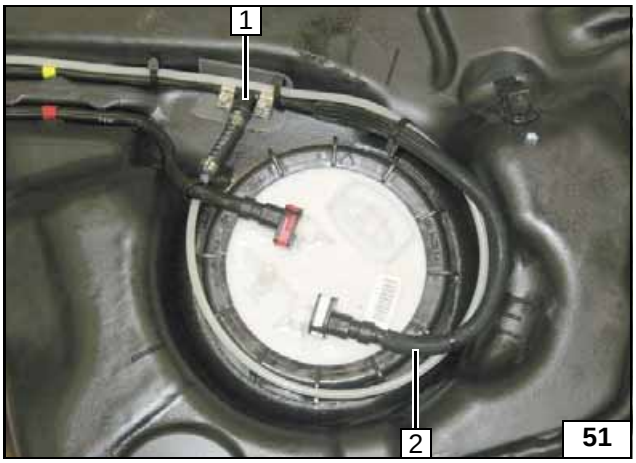
Pull wiring harness of metering pump **3** and fuel line **2** into corrugated tube **4** and route to underbody.

1 Mount wiring harness of heater [2x]
5 Cable tie



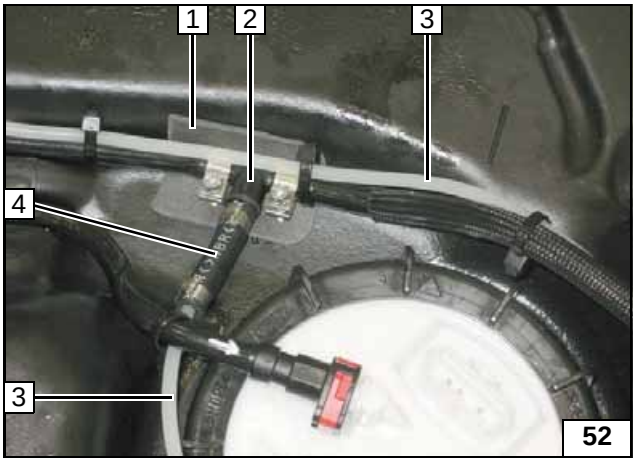
Routing lines

1 Fuel line and wiring harness of metering pump in corrugated tube



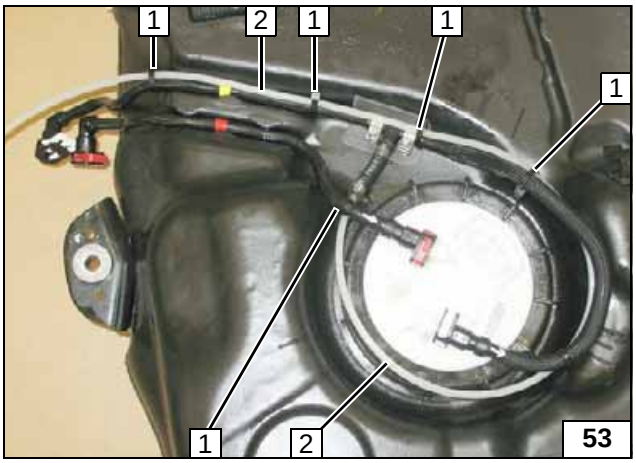
Remove fuel tank according to manufacturer's instructions. Cut off fuel supply line **2** at position **1**.

Removing fuel



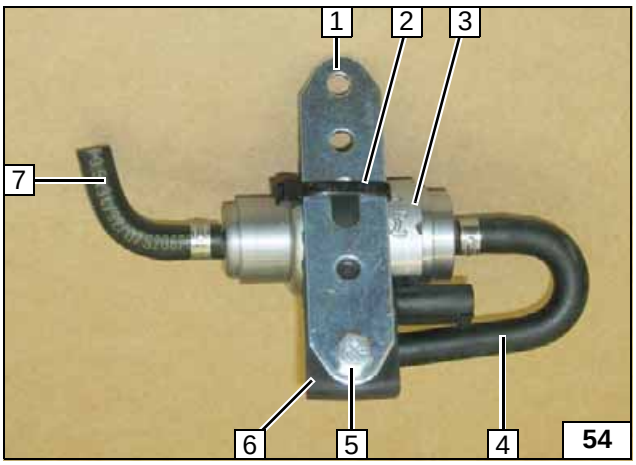
1 Paste insulation strip
2 8x5x8 fuel standpipe, 10 mm dia. hose clamp [2x]
3 Fuel line
4 Hose section, 10 mm dia. clamp [2x]

Mounting fuel standpipe



Fasten fuel line **2** with cable tie **1**. Mount fuel tank according to manufacturer's instructions.

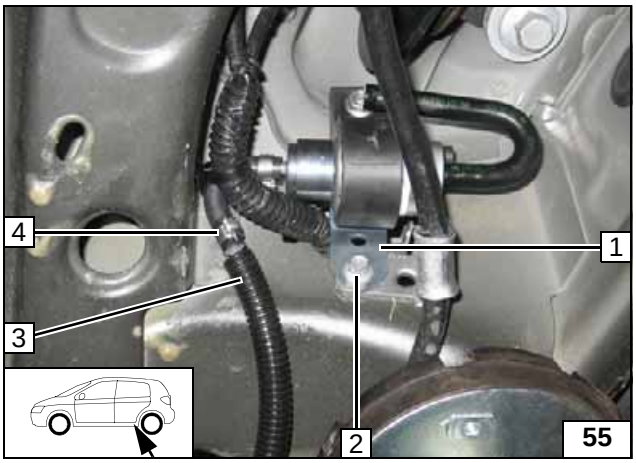
Mounting fuel line



Focus / C-Max

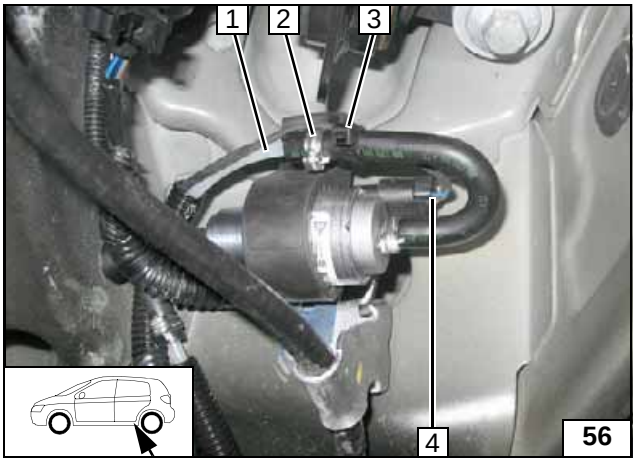
1 Perforated bracket
2 Cable tie
3 Metering pump
4 180° moulded hose, 10 mm dia. clamp
5 M6x25 bolt, flanged nut
6 Metering pump mount
7 90° moulded hose, 10 mm dia. clamp

Premounting metering pump



1 Perforated bracket
2 Original vehicle bolt
3 Fuel line of fuel standpipe in corrugated tube
4 10 mm dia. clamp

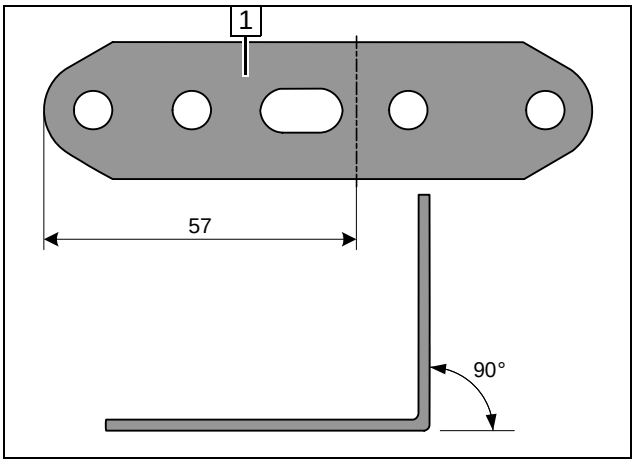
Mounting metering pump



Check the position of the components; adjust if necessary. Check that they have freedom of movement.

1 Fuel line from heater
2 10 mm dia. clamp
3 Cable tie
4 Wiring harness of metering pump, connector mounted

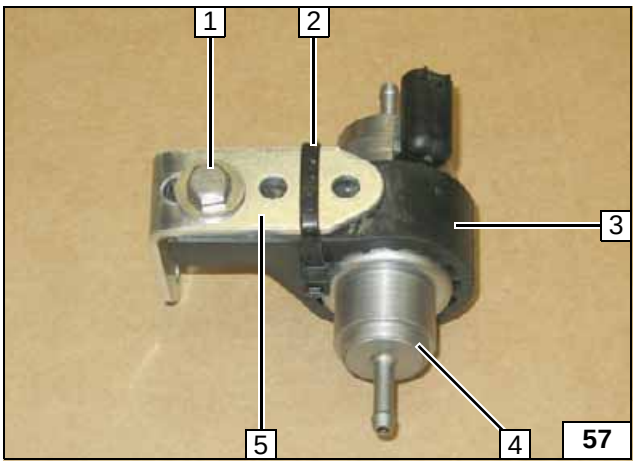
Connecting metering pump



Grand C-Max

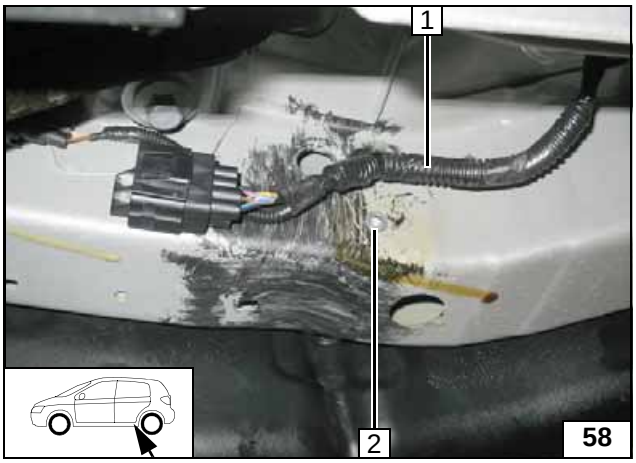
1 Perforated bracket

Angling down perforated bracket



1 M6x25 bolt, washer, flanged nut
2 Cable tie
3 Metering pump mount
4 Metering pump
5 Perforated bracket

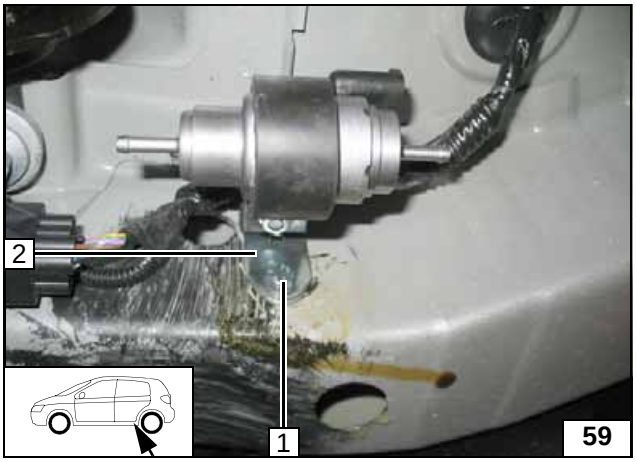
Premounting metering pump



Detach retaining clip of original vehicle wiring harness **1** at Position **2**.

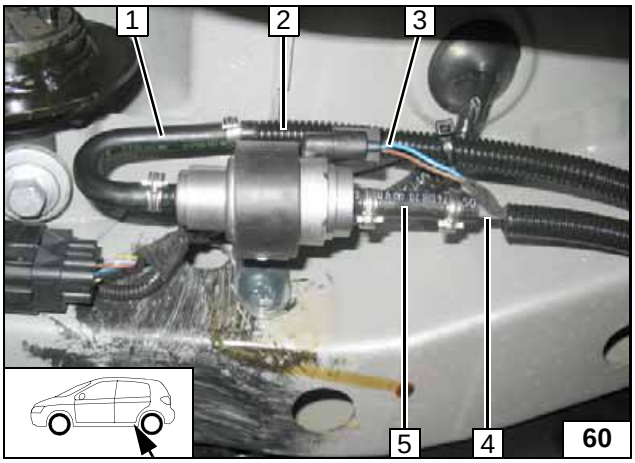
2 Drill out 9.1 mm dia. hole, rivet nut

Installing rivet nut



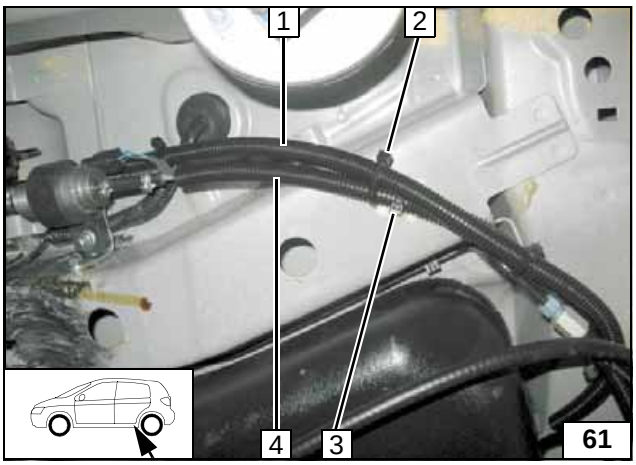
1 M6x20 bolt, spring lockwasher
2 Perforated bracket

Mounting metering pump



1 180° moulded hose, 10 mm dia. clamp [2x]
2 Fuel line of fuel standpipe in corrugated tube
3 Wiring harness of metering pump, connector mounted
4 Fuel line of heater
5 Hose section, 10 mm dia. clamp [2x]

Connecting metering pump



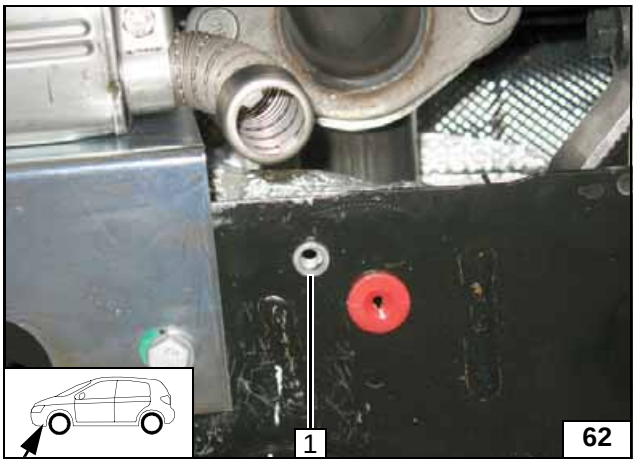
Check the position of the components; adjust if necessary. Check that they have freedom of movement.

1 Fuel line of fuel standpipe in corrugated tube
2 Cable tie
3 Adhesive base, cable tie
4 Fuel line of heater and wiring harness of metering pump in corrugated tube

Routing lines

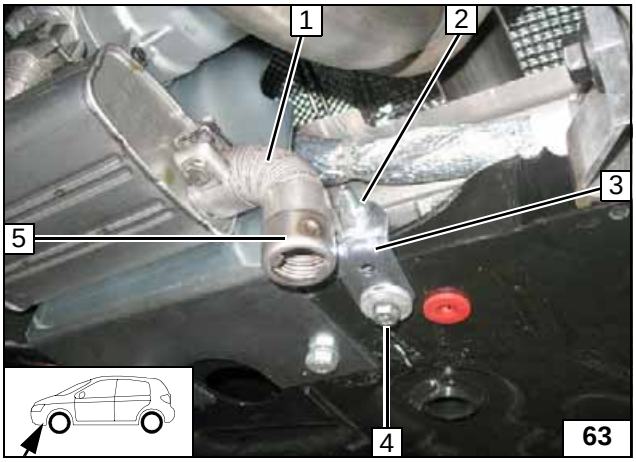
Exhaust gas

Installing rivet nut



1 Drill out 9.1 mm dia. hole, rivet nut

Mounting exhaust end section



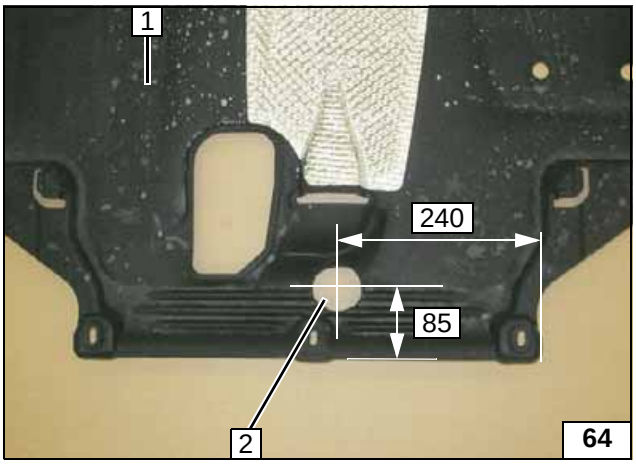
1 Exhaust end section
2 M6x20 bolt, flanged nut
3 Angle bracket
4 M6x20 bolt, spring lockwasher, large diameter washer
5 P-clamp

Final Work

WARNING!
Mount removed parts in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate and tie back all loose wires.
Only use manufacturer-approved coolant. Spray heater components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

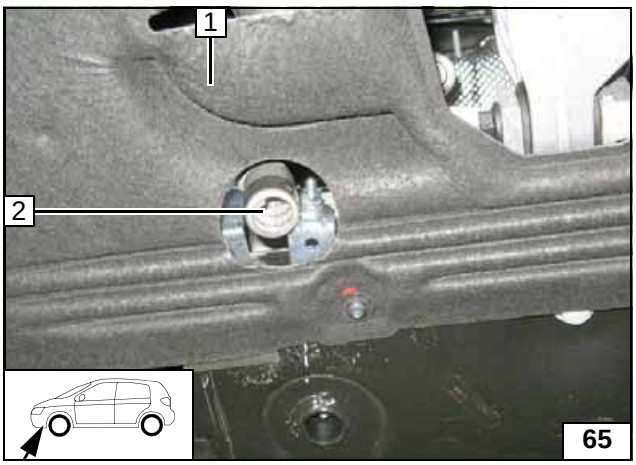
- **Connect the battery.**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.**
- **Adjust digital timer, teach Telestart sender**
- **Make settings on A/C control panel according to the "Operating Instructions for End Customer".**
- **Place signboard "Switch off parking heater before refuelling" in the area of the filler neck**
- **See installation instructions for initial startup and function check**

Cutting out underride protection



1 Underride protection
2 60 mm dia. hole

Aligning exhaust end section



Mount underride protection of engine **1**. Align exhaust end section **2** flush on underride protection **1**. Ensure sufficient distance from neighbouring components.

Webasto
Feel the drive

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Operating instructions for end customer

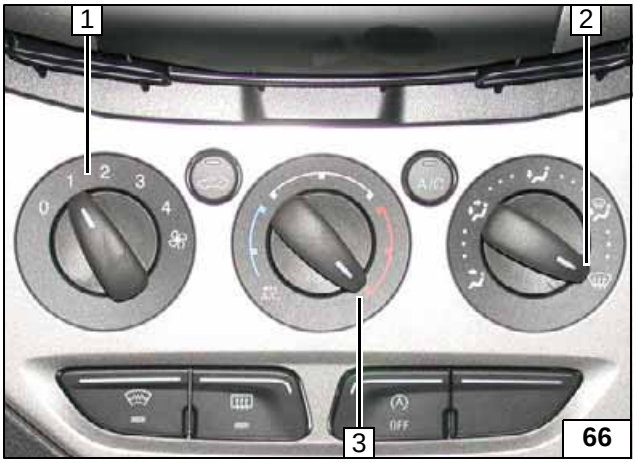
Please remove page and add to the vehicle operating instructions.

Note:
We recommend matching the heating time to the driving time.
Heating time = driving time
Example:
For a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

For vehicles with passenger compartment monitoring this must be deactivated in addition to the vehicle settings for the heating operation.
Instructions for deactivation can be taken from the operating instructions manual of the vehicle.

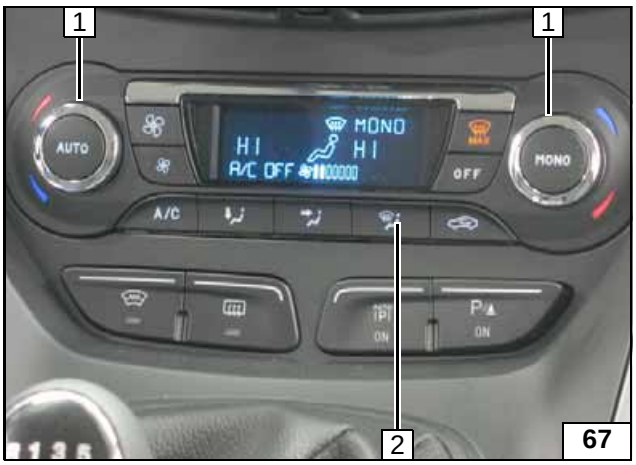
Before parking the vehicle, make the following settings:

Manual air conditioning



1 Set fan to level "1", or max. "2"
2 Air outlet to windscreen
3 Set temperature to "max."

Automatic air-conditioning



Fan speed need not be pre-set.

1 Set temperature to "HI"
2 Air outlet to windscreen